CLAIMS:

1. An amino acid molecule comprising a peptide comprising at least one of the following characteristics:

(a) being capable binding to ManLAM binding antibodies;

(b) being capable of eliciting, upon immunization in a subject, production of ManLAM-binding antibodies.

2. The amino acid molecule of Claim 1, wherein said ManLAM binding antibodies are anti-ManLAM antibodies.

3. The amino acid molecule of Claim 1 or 2, wherein said ManLAM binding antibodies are monoclonal antibodies (mAbs).

4. The amino acid molecule of Claim 3, wherein said mAbs are CS40 antibodies.

5. The amino acid molecule of Claim 1, which does not bind to antibodies directed against lipoglycans selected from non-mannolsylated and low mannosylated lipoglycans.

6. The amino acid molecule of Claim 5, which does not bind to CS35 anti-LAM mAb, 735 anti-ploy $\alpha(2\rightarrow8)$ N-acetyl neuraminic acid mAb, and 2H1 anti-glucuronoxylomannan mAb.

7. The amino acid molecule of any one of Claims 1 to 6, wherein said peptide has an internal aromatic amino acid residue.

8. The amino acid molecule of Claim 7, wherein said aromatic amino acid residue is selected from Phenylalanine (F), Histidine (H), Tryptophan (W), Tyrosine (Y) and conservative substitutions thereof.

9. The amino acid molecule of Claim 7 or 8, wherein said peptide comprises a hydrophilic amino acid residue adjacent and preceding said aromatic residue.

10. The amino acid molecule of any one of Claims 7 to 9, wherein said aromatic residue is W.

11. The amino acid molecule of any one of Claims 1 to 7, wherein said peptide comprises the sequence selected from:

ISLTEWSMWYRH (SEQ ID NO:1)

EEGPWSTHVGRT (SEQ ID NO:2)

WGNEGGDHLQPV (SEQ ID NO:3)

SLKIRWELKMYQE (SEQ ID NO:4)

AVERWEKHTWSE (SEQ ID NO:5)

and immunologic modifications thereof.

12. The amino acid molecule of Claim 11, wherein said peptide comprises the sequence ISLTEWSMWYRH (SEQ ID NO:1), or an immunogenic modification thereof.

13. The amino acid molecule of any one of the preceding claims linked to a carrier protein.

14. The amino acid molecule of Claim 13, wherein said carrier protein is selected from Keyhole limpet hemocyanin (KLH); Bovine serum albumin (BSA); Rabbit serum albumin (RSA); Ovalbumin (OVA); Pumpkin Seed Globulin (PSG), tetanus toxoid (TT), diphtheria toxin (CRM).

15. A method for diagnosing a mycobacterial infection in a subject the method comprising:

(a) contacting said sample with an amino acid molecule comprising a peptide comprising at least one of the following characteristics:

i) being capable of binding to ManLAM-binding antibodies;

ii) being capable of eliciting, upon immunization in a subject, production of ManLAM binding antibodies.

(b) determining formation of a complex comprising said amino acid molecule and ManLAM binding antibodies, if present in the sample;

wherein a positive determination indicates mycobacterial infection in the subject.

16. A method for determining whether a subject has active mycobacterial infection the method comprising:

(a) contacting a sample from said subject with an amino acid molecule comprising a peptide comprising at least one of the following characteristics:

i) being capable of binding to ManLAM-binding antibodies;

ii) being capable of eliciting, upon immunization in a subject, production of ManLAM binding antibodies.

(b) determining level of complexes comprising said amino acid molecule and ManLAM binding antibodies;

(c) comparing said level to a standard;

a level higher than said standard indicating active myobacterial infection in the subject.

17. A method for determining treatment efficacy in a subject having a mycobacterial infection, the method comprising:

(c) contacting samples from said subject, from at least two discrete time points, with an amino acid molecule comprising a peptide comprising at least one of the following characteristics:

i) being capable of binding to ManLAM-binding antibodies;

ii) being capable of eliciting, upon immunization in a subject, production of ManLAM binding antibodies.

(d) determining level of complexes comprising said amino acid molecule and ManLAM binding antibodies in said samples;

wherein a difference in the level between the two time points is indicative of the effectiveness of the treatment.

18. The method of any one of Claims 15 to 17, wherein said ManLAM binding antibodies are anti-ManLAM antibodies.

19. The method of any one of Claims 15 to 17, wherein said amino acid molecule does not bind to antibodies directed against lipoglycans selected from non-manolsylated and low mannosylated lipoglycans.

20. The method of Claim 19, wherein said amino acid molecule does not bind to CS35 anti-LAM mAb, 735 anti-ploy $\alpha(2\rightarrow8)$ N-acetyl neuraminic acid mAb, and 2H1 anti- glucuronoxylomannan mAb.

21. The method of any one of Claims 15 to 20, wherein said amino acid molecule comprises a peptide having an internal aromatic amino acid residue.

22. The method of Claim 21, wherein said aromatic amino acid residue is selected from Phenylalanine (F), Histidine (H), Tryptophan (W), Tyrosine (Y) and conservative substitutions thereof.

23. The method of Claim 21 or 22, wherein said peptide comprises a hydrophilic amino acid residue adjacent and preceding said aromatic residue.

24. The method of any one of Claims 21 to 23, wherein said aromatic residue is W.

25. The method of any one of Claims 15 to 20, wherein said amino acid molecule comprises at least one peptide having the sequence selected from:

ISLTEWSMWYRH (SEQ ID NO:1)

EEGPWSTHVGRT (SEQ ID NO:2)

WGNEGGDHLQPV (SEQ ID NO:3)

SLKIRWELKMYQE (SEQ ID NO:4)

AVERWEKHTWSE (SEQ ID NO:5)

and immunologic modifications thereof.

26. The method of Claim 25, wherein said peptide comprises the sequence ISLTEWSMWYRH (SEQ ID NO:1), and immunogenic modifications thereof.

27. The method of any one of Claims 15 to 26, wherein said mycobacterial infection is caused by *Mycobacterium tuberculosis* (*Mtb*).

28. A kit for diagnosing mycobacterial infection in a subject comprising an amino acid molecule comprising a peptide, the peptide comprising at least one of the following characteristics:

(a) being capable of binding to ManLAM-binding antibodies;

(b) being capable of eliciting production of ManLAM binding antibodies.

29. The kit of Claim 28, wherein said ManLAM binding antibodies are anti-ManLAM antibodies.

30. The kit of Claim 28, wherein said amino acid molecule does not bind to antibodies directed against lipoglycans selected from non-mannolsylated and low mannosylated lipoglycans.

31. The kit of Claim any one of Claims 28 to 30, wherein said peptide has an internal aromatic amino acid residue.

32. The kit of Claim of Claim31, wherein said aromatic amino acid residue is selected from Phenylalanine (F), Histidine (H), Tryptophan (W), Tyrosine (Y) and conservative substitutions thereof.

33. The kit of Claim 31 or 32, wherein said peptide comprises a hydrophilic amino acid residue adjacent and preceding said aromatic residue.

34. The kit of any one of Claims 31 to 33, wherein said aromatic residue is W.

35. The kit of any one of Claims 28 to 30, wherein said peptide comprises the sequence selected from:

ISLTEWSMWYRH (SEQ ID NO:1)

EEGPWSTHVGRT (SEQ ID NO:2)

WGNEGGDHLQPV (SEQ ID NO:3)

SLKIRWELKMYQE (SEQ ID NO:4)

AVERWEKHTWSE (SEQ ID NO:5)

and immunologic modifications thereof.

36. The kit of Claim 35, wherein said peptide comprises the sequence ISLTEWSMWYRH (SEQ ID NO:1), or immunologic modifications thereof.

37. A vaccine comprising an immunologically acceptable carrier and as an active agent an amino acid molecule comprising a peptide comprising at least one of the following characteristics:

(a) being capable of binding to ManLAM-binding antibodies;

(b) being capable of eliciting, upon immunization of a subject, production of ManLAM binding antibodies.

38. The vaccine of Claim 37, wherein said ManLAM binding antibodies are anti-ManLAM antibodies.

39. The vaccine of Claim 37, wherein the amino acid molecule does not bind to antibodies directed against lipoglycans selected from non-mannolsylated and low mannosylated lipoglycans.

40. The vaccine of Claim 39, which amino acid molecule does not bind to CS35 anti-LAM mAb, 735 anti-ploy $\alpha(2\rightarrow8)$ N-acetyl neuraminic acid mAb, and 2H1 anti- glucuronoxylomannan mAb.

41. The vaccine of any one of Claims 37 to 40, wherein said amino acid molecule comprises at least one peptide having an internal aromatic amino acid residue.

42. The vaccine of Claim41, wherein said aromatic amino acid residue is selected from Phenylalanine (F), Histidine (H), Tryptophan (W), Tyrosine (Y) and conservative substitutions thereof.

43. The vaccine of Claim 41 or 42, wherein said peptide comprises a hydrophilic amino acid residue adjacent and preceding said aromatic residue.

44. The vaccine of any one of Claims 41 to 43, wherein said aromatic residue is W.

45. The vaccine of any one of Claims 37 to 40, wherein said amino acid molecule comprises at least one peptide having the sequence selected from:

ISLTEWSMWYRH (SEQ ID NO:1)

EEGPWSTHVGRT (SEQ ID NO:2)

WGNEGGDHLQPV (SEQ ID NO:3)

SLKIRWELKMYQE (SEQ ID NO:4)

AVERWEKHTWSE (SEQ ID NO:5)

and immunologic modifications thereof.

46. The vaccine of Claim 45, wherein amino acid comprises a peptide having the sequence ISLTEWSMWYRH (SEQ ID NO:1), and immunologic modifications thereof

47. The vaccine of any one of Claim 37 to 46, wherein said amino acid molecule is linked to a carrier protein.

48. The vaccine of Claim 47, wherein said carrier protein is selected from Keyhole limpet hemocyanin (KLH); Bovine serum albumin (BSA); Rabbit serum albumin (RSA); Ovalbumin (OVA); Pumpkin Seed Globulin (PSG), tetanus toxoid (TT), diphtheria toxin (CRM).

49. The vaccine of any one of Claims 37 to 48, wherein said amino acid molecule comprises two or more copies of said peptide.

50. The vaccine of any one of Claims 37 to 49, further comprising an immunological adjuvant.

51. A method of immunization of a subject against mycobacterial infection, the method comprises providing said subject with an immunizing amount of an amino acid molecule comprising a peptide comprising at least one of the following characteristics:

(a) being capable of binding to ManLAM-binding antibodies;

(b) being capable of eliciting, upon immunization of a subject, production of ManLAM binding antibodies.

52. The method of Claim 51, wherein said ManLAM binding antibodies are anti-ManLAM antibodies.

53. The method of Claim 51, wherein the amino acid molecule does not bind to antibodies directed against lipoglycans selected from non-mannolsylated and low mannosylated lipoglycans.

54. The method of Claim 53, wherein the amino acid molecule does not bind to CS35 anti-LAM mAb, 735 anti-ploy $\alpha(2\rightarrow8)$ N-acetyl neuraminic acid mAb, and 2H1 anti- glucuronoxylomannan mAb.

55. The method of any one of Claims 51 to 54, wherein said amino acid molecule comprises at least one peptide having an internal aromatic amino acid residue.

56. The method of Claim 55, wherein said aromatic amino acid residue is selected from Phenylalanine (F), Histidine (H), Tryptophan (W), Tyrosine (Y) and conservative substitutions thereof.

57. The method of Claim 55 or 56, wherein said peptide comprises a hydrophilic amino acid residue adjacent and preceding said aromatic residue.

58. The method of any one of Claims 55 to 57, wherein said aromatic residue is W.

59. The method of any one of Claims 51 to 54, wherein said amino acid molecule comprises at least one peptide having the sequence selected from:

ISLTEWSMWYRH (SEQ ID NO:1)

EEGPWSTHVGRT (SEQ ID NO:2)

WGNEGGDHLQPV (SEQ ID NO:3)

SLKIRWELKMYQE (SEQ ID NO:4)

AVERWEKHTWSE (SEQ ID NO:5)

and immunologic modifications thereof.

60. The method of Claim 59, wherein amino acid molecule comprises a peptide having the sequence ISLTEWSMWYRH (SEQ ID NO:1), and immunologic modification thereof

61. The method of any one of Claim 51 to 60, wherein said amino acid molecule is linked to a carrier protein.

62. The method of Claim 61, wherein said carrier protein is selected from Keyhole limpet hemocyanin (KLH); Bovine serum albumin (BSA); Rabbit serum albumin (RSA); Ovalbumin (OVA); Pumpkin Seed Globulin (PSG), tetanus toxoid (TT), diphtheria toxin (CRM).

63. The method of any one of Claim 51 to 62, wherein said amino acid molecule is administered to said subject in combination with an immunological adjuvant.

64. The method of claim 63, wherein said immunological adjuvant administered before, concomitant or after treatment of said subject with said amino acid molecule.

65. The method of any one of Claims 51 to 64, wherein said amino acid molecule comprises multiple copies of said peptide.